Title (Units): **COMP7450 User Interface Design and Usability Testing (3,2,1)**

Course Aims: This course covers user-centered interaction thinking and methods of usability testing on information systems. For the interaction design, the course will address various interface issues applicable to interactive systems, including: command languages, menus, forms, direct manipulation, computer supported cooperative work, information search and visualization, and display design. Case study on healthcare systems will be discussed in the course.

Prerequisite: Postgraduate Student Standing

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Apply core theories, models and methodologies from the field of human-computer interaction
2	Explain what the user-centered design cycle is and how to practice this approach to design interactive software systems
3	Analyze one after another the main features of a GUI: the use of colors, organization and layout of content, filling the interface with useful and relevant information, and communication techniques; and to critique designs in order to provide better solutions
4	Explain how to gauge the usability of digital environments, tools and interfaces
	Professional Skill
5	Design graphical user interfaces with modern software tools
6	Perform usability testing of interactive software by using user and task analysis

Calendar Description: This course provides an introduction to and overview of user interface design and usability testing. It integrates theories and methodologies from computer science, cognitive psychology, design, and many other areas. Issues include: command languages, menus, forms, and direct manipulation, graphical user interfaces, computer supported cooperative work, information search and visualization, World Wide Web design, input/output devices, and display design.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1-4	Students will learn the theories, models and interface design techniques via lectures and tutorials.
5-6	Students will work on assignments and group project to gain hands-on experiences of designing interfaces and performing usability testing.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	50%	2,3,5,6	30% is allocated for the group project. The remaining 20% is allocated for lab exercises and individual assignments.
2	Examination	50%	1-4	The final examination is designed to evaluate students' understanding in different parts. The questions will include fundamental, analytic and design types in order to distinguish different levels of understanding of human computer interaction design.

Assessment Rubrics:

Excellent (A)	• Achieve all the six CILOs, demonstrating an excellent mastery of both the theoretical and practical aspects of the knowledge and skills in the selected topics • Able to develop correct solutions to problems in user interface design and usability testing, accompanied by in-depth analysis and insight • Demonstrate a thorough understanding and solid knowledge of the principles and techniques of user interface design and usability testing • Able to draw on a variety of techniques and relevant knowledge and appropriately apply them to new situations and real-life problems
Good (B)	• Achieve all the six CILOs, demonstrating a good understanding of the associated concepts and underlying methodologies in the selected topics • Able to develop correct solutions to problems in user interface design and usability testing, accompanied by adequate explanations • Demonstrate a competent level of knowledge of the principles and techniques of user interface design and usability testing • Ability to make use of appropriate techniques and knowledge and apply them to new situations and problems
Satisfactory (C)	• Achieve most of the six CILOs, demonstrating a basic level of understanding of the associated concepts and underlying methodologies in the selected topics • Able to provide acceptable solutions to problems in user interface design and usability testing • Demonstrate an adequate level of knowledge of the principles and techniques of user interface design and usability testing • Ability to make use of some techniques and knowledge and apply them to familiar situations and problems
Fail (F)	• Achieve less than four of the six CILOs, with little understanding of the associated concepts and underlying methodologies in the selected topics • Unable to provide solutions to simple problems in user interface design and usability testing • Knowledge of the principles and techniques of user interface design and usability testing falling below the basic minimum level • Unable to apply techniques or knowledge to familiar situations or problems

Course Content and CILOs Mapping:

Content		**CILO No.**
I	Human Factors and Models	1
II	User Interface Design Process	2,5
III	Usability Testing and Expert Review	4,6
IV	Interface Design Issues	3,5

References:

- Interaction Design: Beyond Human-Computer Interaction, 4th Edition by Jenny Preece, Helen Sharp, Yvonne Rogers, John Wiley & Sons (2015)
- Human-Computer Interaction: An Empirical Research Perspective, 1st Edition by Scott MacKenzie, Morgan Kaufmann (2013)
- Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests, 2nd Edition by Jeffrey Rubin, Dana Chisnell, Jared Spool, Wiley (2008)
- Designing the User Interface: Strategies for Effective Human-Computer Interaction, 6th Edition by Ben Shneiderman, Catherine Plaisant, Maxine Cohen, Steven Jacobs, Niklas Elmqvist, Nicholas Diakopoulos (2016)

Course Content:

<u>Topic</u>

I. Human Factors and Models
   A. Interactivity and interaction design
   B. Understanding and conceptualizing interaction
   C. Understanding users and how interfaces affect users
   D. Guidelines, principles and theories

II. User Interface Design Process
   A. Process of interaction design
   B. User analysis
   C. Task analysis
   D. Design, prototyping and construction

III. Usability Testing and Expert Review
   A. How to design experiments to test user interfaces
   B. How to analyze study data
   C. How to learn and iterate from user studies

IV. Interface Design Issues
   A. Direct manipulation
   B. Menu selection, form fill-in and dialog boxes
   C. Balancing function and fashion
   D. Information design and data visualization